Kingshill

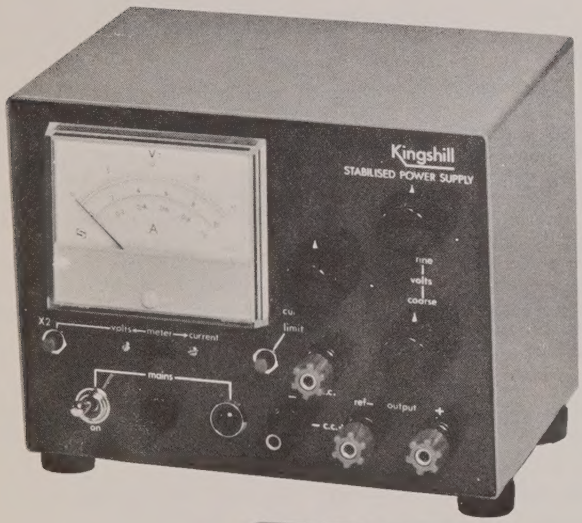
POWER SUPPLIES

TECHNICAL DATA

'V' SERIES - MODEL 'C'

KINGSHILL ELECTRONIC PRODUCTS LTD., TORRENS STREET, LONDON, EC1V 1NJ 01-837 9865

'V' SERIES


Kingshill
STABILISED POWER SUPPLY
fine
volts
coarse
X2
volts
meter
current
c.c.
limit
mains
on
c.c.
ref−
output
+
− c.c.

STABILISED POWER SUPPLY MODEL 36V2C
mains
volts
X2
Kingshill
mains
off
on
volts
current
volts coarse
limit
c.c.
volts fine
out−
ref−
− c.c.
ref +
out+

'V' SERIES

OPERATING INSTRUCTIONS

INSTALLATION

Before the power supply is connected to the mains it is important that the mains transformer tappings are set correctly to correspond with the user's mains voltage. When despatched from the works the instrument is ready for use at 240 volts. In the standard instruments, the primary of the mains transformer is tapped 10, 0, 200, 220, 240, volts, thus covering the range 200-250 volts in 10 volts steps or it has twin primaries of 5-0-100-110-120, covering the ranges 100-125 and 200-250 volts in 5 volts steps. Adjustment is obtained by altering the soldered connections on the mains transformer panel. To alter the primary taps the instrument should first be removed from the case by undoing the four feet and the two screws on the underside of the V units and sliding the unit out, front panel first. The mains transformer tappings can be clearly seen, being situated along the one side of the transformer panel. It remains to connect the brown and blue wires to the correct lugs so that the sum of the voltages marked on the two tags is equal to the mains voltage Twin primaries are paralleled for 100-125 volts and connected in series for 200-250 volts.

IMPORTANT

Always ensure free passage to the cooling air flow under the instrument and out of the top vents, or overheating may occur under certain loading conditions.

THE CONTROLS

All operating controls are conveniently placed on the front panel.

(1) MAINS SWITCH. Self-explanatory.

(2) VOLTAGE CONTROLS. Coarse and fine controls allow easy setting at any required voltage between zero and maximum. The fine control is used to set the current for true constant current use.

NOTE: If the voltage controls are returned to minimum too quickly, C5 discharges through R8 and may burn out this resistor. This causes total loss of voltage control with output volts at maximum.

(3) METER SWITCHES. In the 'Current' position of this switch the current scale on the meter is brought into use. In the 'volts' position the higher of the two voltage scales applies, and when the X2 button is pressed the sensitivity is doubled for easy setting of low voltages, and the lower voltage scale should be read.

(4) CURRENT LIMIT. The protection is of the 'Constant Current' form of limiter which is adjusted by means of the potentiometer on the front panel. The associated push button places a low resistance across the output of the unit, and when this is pressed a virtual short-circuit exists allowing the limiter control to set up the desired limit current read on the A scale of the meter. The push button should be operated only long enough to set up the desired limit value to avoid unnecessary heating. At output voltages below 3 volts it may be necessary to use an external short-circuit for this purpose as the internal 'shorting' resistance may not be of sufficiently low value. It is always advisable to set the current limiter up at a low output voltage, say, 10 volts if possible to minimise the discharge pulse of current from the output capacitor that flows through the push button when it is operated.

(5) OUTPUT TERMINALS. Units having 4-terminal output are wired internally as such, but shorting links are included on the unit across each OUTPUT and REF pair of terminals to convert the output to 2-terminal since this is usually required for bench use. The OUTPUT and REF terminals are thus strapped and either one or both may be used for external connection. If 4-terminal output is desired, the shorting link should be removed from each pair of terminals and the load connected in the usual way. This facility is limited to the negative output on the 'Compact' (18V1C-15A01C) series.

(6) CONSTANT CURRENT APPLICATION. The constant current provided when the Unit crosses over into current limit has a short term stability of <1% which is satisfactory for low resistance measurement etc. However, a true constant current of high stability is obtained as follows:-

(i) Turn the voltage coarse control to minimum and the current limit control to maximum.

(ii) Remove the external link between the OUT-(black terminal) and the REF-(blue terminal), then re-connect it between the Ref- and the red terminal marked c.c. The load is then connected between the REF-(positive) and the OUT-(negative) and the fine control is used to adjust the current.

NOTE

(i) For constant current operations, the REF-terminal become the positive output.

(ii) The link between OUT+ and REF+ must be used in constant current applications.

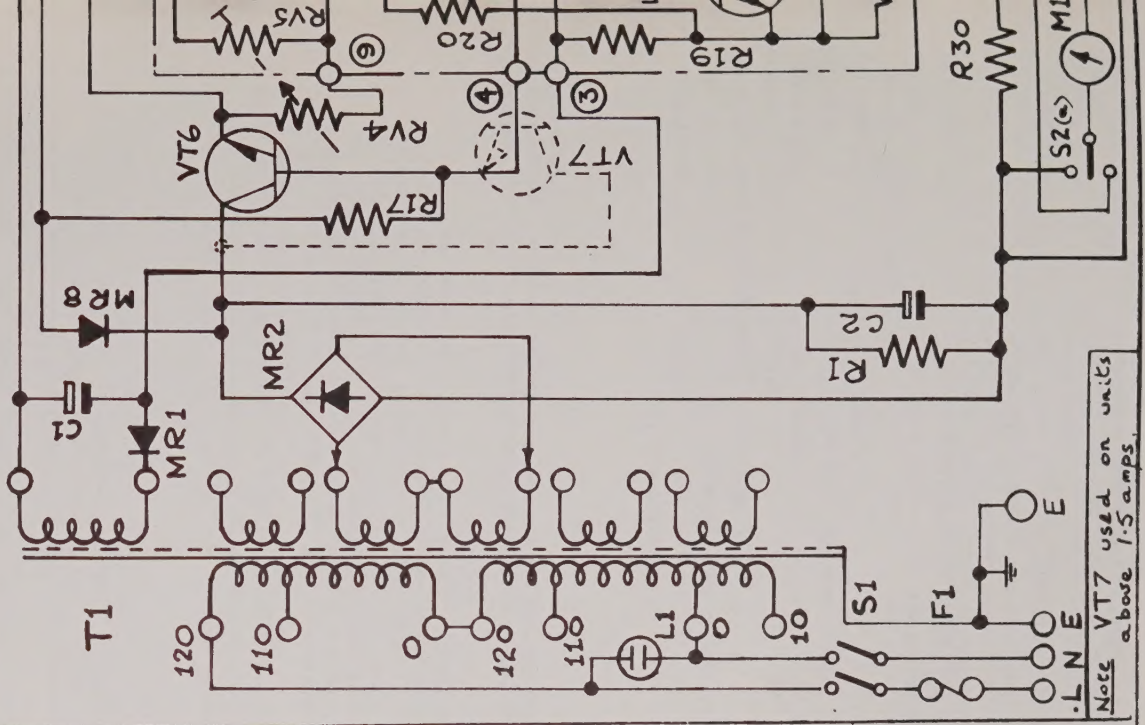
(iii) The constant current output will provide the maximum output voltage of the Unit if under-loaded or open circuit.

(iv) The stability of the current output is in part dependant on the reference resistor R33, thus to obtain an even more stable current, a precision external resistor can be used, connected between REF+ and REF−. Approximately 2 volts is dropped across R33 at full current but higher stability and lower ripple is obtainable by using a larger sample voltage across the external resistor. This restricts the voltage available across the constant current load, as the sample voltage plus the load voltage cannot exceed the full rated output of the Unit.

WARNING: Kingshill Units should be used within the parameters set for electrical performance in the catalogue. Installation, modification or servicing must be performed by skilled personnel

SPECIFICATIONS

LOAD STABILITY	<0.02%
LINE STABILITY	>10,000: 1 (% change input voltage/% change output voltage).
TEMPERATURE COEFFICIENT	0.01% per °C
MAINS TOLERANCE	±10%
INSULATION	>30 M OHMS
RIPPLE	<300 μ V or 0.03% in current mode.
IMPEDENCE	C0.2 Ω 100 Kc/s
MAX. AMBIENT TEMP.	45°C
INPUT	200 – 250V in 10V steps, 100 – 125V to order.
OUTPUT	4 Terminal fully floating output [3 terminal on units 18V1C to 15A01C]. Output voltage is adjustable by coarse and fine control in single sweep. Meter accuracy to BS 89 (1954). The meter has two voltage and one current range.
PROTECTION	Electronic constant current overload protection down to short circuit.
FINISH	Standard two tone grey stove enamel. Hard wearing scratch resistant washable Acrylic enamel on case.



ISSUE	
MOD	

KINGSHILL ELECTRONIC PRODUCTS LTD. TORRENS WORKS, TORRENS STREET LONDON E.C.1.

DRAWN	TITLE CIRCUIT DIAGRAM 'V' SERIES	DRG No ASMCC1590
DATE		
APPROVED		

R.D.O

R6
R16
VT8
OUT+
MR6
MR4
C6
R25
R24
R9
C7
R18
RV1
VT3
R13
R26
R12
REF+
C4
R11
OA1
MR3
C8
R33
R4
R10
S4
C5
C.C.
VT5
VT4
MR5
C3
MR13
MR9
MR11
R2
R3
R5
R28
REF-
VT9
MR10
MR7
R22
R27
MR12
C9
R8
RV3
C10
R23
RV2
S3
OUT-
S2(b)
R31
R32

PARTS LIST 'V' SERIES

ITEM		DESCRIPTION		
R 1	RESISTANCE	Bleed	2%	½W
R 2	"	3.9K	2%	½W
R 3	"	10K	2%	½W
R 4	"	Load	5%	3W
R 5	"	15K	2%	½W
R 6	"	Series	5%	3W
R 8	"	22	2%	½W
R 9	"	150	2%	½W
R10	"	2.2K	2%	½W
R11	"	1K	2%	½W
R12	"	VOLTAGE REFERENCE		
R13	"	100	2%	½W
R16	"	270	2%	½W
R17	"	100	2%	½W
R18	"	1.8K	2%	½W
R19	"	82	2%	½W
R20	"	10K	2%	½W
R21	"	8.2K	2%	½W
R22	"	1K	2%	½W
R23	"	1K	2%	½W
R24	"	47	2%	½W
R25	"	1K	2%	½W
R26	"	220	2%	½W
R27	"	47	2%	½W
R28	"	47K	2%	½W
R29	"	3.9K	2%	½W
R30	"	CURRENT SHUNT		
R31	"	VOLTAGE SERIES		
R32	"	" "		
R33	"	CURRENT REFERENCE		
RV1	POTENTIOMETER	1K PRE-SET		
RV2	"	COARSE CONTROL		
RV3	"	FINE CONTROL		
RV4	"	2.5K		
RV5	"	10K PRE-SET		
C 1	CAPACITOR	100uF	64V	
C 2	"	RESERVOIR		
C 3	"	4.7μF	160V	
C 4	"	0.1uF	250V	

PARTS LIST 'V' SERIES

ITEM	DESCRIPTION		
C 5	CAPACITOR	OUTPUT	
C 6	"	100uF	10V
C 7	"	SELECTED	
C 8	"	0.01uF	250V
C 9	"	0.01uF	250V
MR1	RECTIFIER	10D2	
MR2	RECTIFIER	POWER	
MR3	ZENER DIODE	VR9F	
MR4	REFERENCE DIODE	IN823	
MR5	ZENER DIODE	VR9F	
MR6	ZENER DIODE	MR30CH	
MR7	DIODE	10D2	
MR8	DIODE	VT6 PROTECTION	
MR9	ZENER DIODE	MR51CH	
MR10	DIODE	10D2	
MR11	DIODE	10D2	
M1	METER	M32A	
OA1	OPERATIONAL AMPLIFIER 741		
VT3	TRANSISTOR	BC108	
VT4	"	BC108	
VT5	"	BC108	
VT6	"	SERIES	
VT7	"	DRIVER	
VT8	"	BCY70	
VT9	"	BFY51	
T1	TRANSFORMER	MAINS	
S1	SWITCH	D.P.S.T. MAINS	
S2	"	D.P.D.T. SLIDER	
S3	"	PUSH ON	
S4	"	PUSH ON	
L1	INDICATOR	NEON	
F1	FUSE	MAINS TYPE T 20 x 5m/m	
	200-250 VOLTS INPUT.	MODULE C	500mA
		CV and V1	1A
		V2 and V3	2.5A
	100-125 VOLTS. MULTIPLY BY 2		

THE COMPANY RESERVES THE RIGHT TO AMEND SPECIFICATIONS WITHOUT PRIOR NOTICE.

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